REMARKS

Entry of this Amendment and reconsideration of the subject application in view thereof are respectfully requested.

I. Claim Status

Claims 1-4 and 8-22 are pending in the application. Claims 1-4, 8-13, and 20-22 have been rejected. Claims 14-19 have been withdrawn from consideration. New Claims 23-24 have been added.

Claim 1 has been amended to recite that the semiconductive film is obtained by feeding a resin composition comprising poly(ether ether ketone) and conductive carbon black to an extruder, melt-extruding the resin composition in the form of a film from a die, the lip clearance of which has been controlled to at most 1.0 mm, and then cooling and solidifying the film in a molten state by a cooling temperature in a range of 60 to 120°C. This amendment is supported on page 29, lines 11-25 of the specification. Additionally, new Claims 23 and 24 have been added. These new claims are supported on page 31, lines 5-14 of the specification. No new matter is added.

II. Response to Final Office Action of March 31, 2009

Applicant respectfully believes that the claim rejections made in the Final Office Action of March 31, 2009 (Part of Paper No./Mail Date 20090324) (herein referred to as "the Office Action" or "this Office Action" or "the present Office Action") have been either overcome or rendered moot in view of amendments to the claims herein and the following discussion:

A. Rejection of Claims under 35 U.S.C. § 102/103

Claims 1-4, 8-13 and 20-22 stood rejected under 35 U.S.C. 102(b) as being anticipated, or in the alternative are rejected under 35 U.S.C. 103(a) as being unpatentable over, Yoshida et al. (JP 07-085722) ("Yoshida"). Applicant respectfully traverses this rejection for at least the following reasons: It is respectfully submitted that Yoshida does not disclose the claimed invention, and Applicant requests that this rejection be removed.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Schering Corporation v. Geneva Pharmaceuticals, Inc.*, 339 F.3d 1373 (Fed. Cir. 2003). Identity of invention requires that a prior reference disclose to one of ordinary skill in the art all elements and limitations of the patent claim. *Scripps Clinic v. Genentech*, 927 F.2d 1565, 1576 (Fed. Cir. 1991). Absence from the reference of any claimed element negates anticipation. *Kloster Speedsteel AB v. Crucible, Inc.*, 230 USPQ 81 (Fed. Cir. 1986). Inherent anticipation requires that the missing descriptive material is "necessarily present," not merely, probably or possibly present in the prior art reference. *In re Robertson*, 169 F.3d 743 (Fed. Cir. 1999).

In the Office Action the Examiner indicated that:

> "Applicant alleges that a lip clearance of at most 1.0 mm and a molding temperature of between 60 and 120 degree Celsius are needed to maintain uniform thickness as instantly claimed. Firstly, the examiner notes that nowhere in the instantly claimed product are there any such limitations." (Office Action at 7), and

> "In summation, because the lip clearance and cooling temperature are not instantly claimed, the applicant is required to provide evidence to show that the prior art would not posses the instantly claimed properties, (i.e., the properties could be obtained via methods other than the instant methods)" (Office Action at 8).

In response to the Office Action, Applicants amended claim 1 to recite that the semiconductive film has been obtained by feeding a resin composition comprising poly(ether ether ketone) and conductive carbon black having a DBP oil absorption within a range of 30 to 700 ml/100 g in a proportion of 5 to 40 parts by weight per 100 parts by weight of the poly(ether ether ketone) to an extruder, melt-extruding the resin composition in the form of a film from a die, the lip clearance of which has been controlled to at most 1.0 mm, and then cooling and solidifying the film in a molten state by a cooling temperature in a range of 60 to 120°C.

The lip clearance is made small, whereby deformation of the film in the molten state can be lessened to provide a semiconductive film with few irregularities of thickness and volume resistivity and free of anisotropy in mechanical properties.

When the lip clearance of a T-die or ring die is set to 1.5 mm, the resultant semiconductive film exhibits wide variations in both thickness and volume resistivity throughout the film and large anisotropy in tear strength. (See Comparative Example 2 in Table 2.) The semiconductive film of

Comparative Example 2 exhibits great differences in the values of the tensile elongation at break in MD and TD, and anisotropy in tensile elongation at break is observed. (See Comparative Example 2 in Table 1.)

In the technical field of synthetic resin films, the cooling temperature of a film melt-extruded from a T-die or ring die greatly varies according to the kind of a synthetic resin used This is because thermal properties such as glass transition temperature, melting temperature and crystallization temperature greatly vary according to the kind of the synthetic resin. In addition, the relationship between the degree of crystallization of a synthetic resin and mechanical properties of a film formed from the synthetic resin varies according to the kind of the synthetic resin. Synthetic resins include those showing a tendency to improve the mechanical properties of films formed therefrom as the degree of crystallization thereof increases and those showing a tendency to deteriorate the mechanical properties of films formed therefrom as the degree of crystallization thereof increases.

Example 1 of Yoshida shows an experimental example where a tubular film was formed by using a resin composition comprising polycarbonate and two kinds of conductive carbon black. Specifically, Example 1 of Yoshida shows that a tubular film having a thickness of 150 μm was formed by feeding the polycarbonate resin composition to a single-screw extruder, and melt-extruding the resin composition from a spiral die controlled to a temperature of 250°C ± 1°C. Nowhere does Yoshida describe the cooling temperature of the tubular film. One skilled in the art would know from the description in Yoshida that the film was air-cooled at an atmospheric temperature. See the discussion related to the obviousness rejection below.

Example 2 of Yoshida shows an experimental example where a tubular film was formed by using a resin composition comprising thermoplastic polyimide and two kinds of conductive carbon black. Specifically, Example 2 of Yoshida shows that a tubular film having a thickness of 100 μm was formed by feeding the thermoplastic polyimide resin composition to a twin-screw extruder, melt-extruding the resin composition from a spiral die controlled to a temperature of 400°C ± 1°C, and causing the extrudate to pass through a cooling mandrel controlled to 150°C ± 1°C.

Example 3 of Yoshida shows an experimental example where a tubular film was formed by using a resin composition comprising poly (ether ether ketone) (PEEK) and two kinds of conductive carbon black. Specifically, Example 3 of Yoshida shows that a tubular film was formed by feeding

the PEEK resin composition to a twin-screw extruder, melt-extruding the resin composition from a spiral die controlled to a temperature of 380°C ± 1°C, and causing the extrudate to pass through a cooling mandrel controlled to 20°C ± 1°C.

With regard to the feature that "the number of reciprocating folds required up to cutting . . . being at least 10,000 times," the Examiner simply makes a conclusory statement without support. This unsupported asserted appears to be based on inherency theory. However, in relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art. Applicant respectfully believes that the Examiner has not provided any objective evidence or cogent technical reasoning that "the number of reciprocating folds required up to cutting . . . being at least 10,000 times" is necessarily present in the semiconductive film taught in Yoshida to support the conclusion of inherency. From the discussion herein, it should be noted that this feature is not necessarily present in Yoshida. To the extent such facts are within the Examiner's personal knowledge, the Examiner is requested to make them part of the record by way of affidavit as required by 37 C.F.R. §1.104(d)(2). In the absence of such additional evidence, the conclusory assertion is insufficient and cannot support the anticipation rejection.

As described above, Yoshida shows that the cooling temperature was greatly varied according to the kind of the synthetic resin. Yoshida does not describe the cooling temperature range in Applicant's invention. Yoshida does not teach the limitation of the number of reciprocating folds. Because Yoshida does not disclose each and every limitation in Applicant's claims, Applicant respectfully request that the rejection of claims 1-4, 8-13, and 20-22 be withdrawn.

B. Rejection of Claims under 35 U.S.C. § 103

Claims 1-4, 8-13 and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable under Yoshida et al. (JP 07-085722) ("Yoshida"), in view of Moss et al. (JP 03-261531) ("Moss). Applicant respectfully traverses this rejection and submits that the Examiner has not established a prima facie case.

To establish a *prima facie* case of obviousness the prior art reference (or references when combined) must teach or suggest all of the claim limitations. MPEP §2142; *Velander v. Garner*, 348 F.3d 1359, 1363 (Fed. Cir. 2003). The *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1 (1966), factors control an obviousness inquiry. Those factors are: 1) "the scope and content of the prior art"; 2) the "differences between the prior art and the claims"; 3) "the level of ordinary skill in the pertinent art"; and 4) objective evidence of nonobviousness. *KSR International Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1734 (2007) (quoting *Graham*, 383 U.S. at 17-18). "A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention." *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984). A prior art reference teaches away when "a person of ordinary skill in the art, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant." *In re Gurley*, 27 F.3d 551 (Fed. Cir. 1994); *Cf. Baxter International, Inc. v. McGraw, Inc.*, 149 F.3d 1321 (Fed. Cir. 1998).

Moss is cited as disclosing a production process of a continuous film of a poly (ether ketone ketone) resin (PEKK resin). More specifically, Moss discloses a production process of a film, comprising melt-extruding the PEKK resin from a die at a temperature of 400°C or lower and solidifying the melt-extruded product by bringing it into contact with the surface of a rotating cooling drum kept at a temperature between 100 °C and 170°C.

However, the poly(ether ketone ketone) resin (PEKK resin) used in Moss is a synthetic resin having a repeating unit of "ether ketone ketone", but including no repeating unit of "ether ether ketone" and is different from the PEEK resin used in the present invention. Moss only teaches the fact that the cooling temperature in forming of a film of the poly(ether ketone ketone) resin (PEKK resin) is controlled within a range of 100 to 170°C. Further, Moss strongly suggests the fact that the cooling temperature range is based on the kind of the synthetic resin used.

The poly (ether ether ketone) resin (PEEK resin) used in the present invention is a crystalline resin. Since the crystallization temperature of the PEEK resin is high, crystallization of the PEEK resin is caused to proceed when the cooling temperature of a film of the PEEK resin is made high in forming of the film. However, the PEEK resin film tends to deteriorate the mechanical properties thereof and become brittle when the crystallization of the PEEK resin is

caused to proceed. Therefore, the cooling temperature of the film of the resin composition comprising the PEEK resin is controlled to a temperature as extremely low as 20°C ± 1°C in forming of the film in Example 3 of Yoshida.

Although Example 2 of Yoshida shows that the cooling temperature was controlled to 150°C ± 1°C, the synthetic resin used in this case is a thermoplastic polyimide resin, and is not the PEEK resin. Yoshida neither teaches nor suggests the fact that the cooling temperature is controlled to 150°C ± 1°C even when the PEEK resin composition is used. Yoshida neither teaches nor suggests the fact that the cooling temperature is controlled within the range of 60 to 120°C when the PEEK resin composition is used.

Comparative Example 4 of the present specification shows that when the cooling temperature in forming of the film of the PEEK resin composition was made as high as 210°C, a film narrow in a scatter of thickness was provided (Table 2), but the tensile elongation at break thereof was extremely small, and the number of reciprocating folds required up to cutting in the folding endurance test was at the level as low as 2,500 in MD and 1,800 in TD (Table 3).

On the other hand, Comparative Example 5 of the present specification shows that when the cooling temperature in forming of the film of the PEEK resin composition was made as low as 20°C, a film excellent in modulus in tension, tensile elongation at break, number of reciprocating folds required up to cutting in the folding endurance test and tensile strength was provided, but the ratio of the maximum value to the minimum value in the thickness of the film was 1.6, and so the scatter of thickness of the film was wide.

In Yoshida, the cooling temperature in forming of a film of a resin composition comprising the PEEK resin is controlled to a temperature as extremely low as 20°C ± 1°C. The reason for it is that the proceeding of crystallization in the cooling step is inhibited according to technical common sense in PEEK resin films, thereby providing a film excellent in mechanical properties. Example 3 of Yoshida shows that the ratio of the maximum value to the minimum value in the volume resistivity of the PEEK resin film obtained by the above-described process falls within a range of 1 to 10 times (Table 1). However, direct correlation is not necessarily present between a scatter of volume resistivity and a scatter of thickness in the PEEK resin film.

The reason why the ratio of the maximum value to the minimum value in the volume resistivity of the PEEK resin film in Example 3 of Yoshida is small is that a combination of two

kinds of conductive carbon black each having a specific oil absorption is used.

Comparative Examples 1 and 2 of Yoshida show films formed under the same film-forming conditions (the cooling temperature being also the same as 20°C ± 1°C) as in Example 3. It is presumed that the respective films of Example 3, Comparative Example 1 and Comparative Example 2 of Yoshida have the same scatter of thickness as one another because the films are formed under the same film-forming conditions. However, both films of Comparative Examples 1 and 2 of Yoshida each have a ratio of the maximum value to the minimum value in the volume resistivity falling within a range of 1 to 100 times (Comparative Example 1) or a range of 1 to 500 times (Comparative Example 2) and so their scatters of volume resistivity are extremely wide. These experimental results clearly indicate that direct correlation is not always present between the scatter of volume resistivity and the scatter of thickness in the PEEK resin film. Accordingly, the narrow scatter of the volume resistivity of the PEEK resin film in Example 3 of Yoshida does not necessarily mean that the scatter of thickness thereof is narrow.

As described above, the cooling temperature is controlled to 20°C ± 1°C in Example 3, Comparative Example 1 and Comparative Example 2 of Yoshida. However, the prior art, in which the cooling temperature is controlled to a low temperature in this manner, can provide only a film wide in a scatter of thickness.

Comparative Example 4 of the present specification shows that the cooling temperature is controlled to a high temperature of 210°C, thereby providing a semiconductive film having a ratio of the maximum value to the minimum value in thickness of 1.1, but the maximum value to the minimum value in the volume resistivity thereof exceeds 10 times (Tables 1 and 2). This fact also indicates that direct correlation is not always present between the scatter of volume resistivity and the scatter of thickness in the semiconductive film.

On the other hand, in the present invention, a semiconductive PEEK resin film narrow in scatters of both thickness and volume resistivity, large in the number of reciprocating folds required up to cutting in the folding endurance test and highly balanced among these various properties can be provided by feeding a resin composition comprising poly (ether ether ketone) and conductive carbon black having a DBP oil absorption within a range of 30 to 700 ml/100 g in a proportion of 5 to 40 parts by weight per 100 parts by weight of the poly (ether ether ketone) to an extruder, melt-extruding the resin composition in the form of a film from a die, the lip clearance of which has been

controlled to at most 1.0 mm, and then cooling and solidifying the film in a molten state at a cooling temperature in a range of 60 to 120°C.

The semiconductive film according to the present invention is also excellent in other mechanical properties such as modulus in tension, tensile elongation at break and tensile strength and is extremely small in anisotropy in these mechanical properties (Tables 1 to 3). In addition, the semiconductive film according to the present invention is not required to use a combination of two kinds of conductive carbon black like the film of Yoshida et al. According to the present invention, a conductive film extremely narrow in the scatter of volume resistivity can be provided by using conductive carbon black having a DBP oil absorption within a range of 30 to 700 ml/100 g.

As already discussed, if the cooling temperature in forming of the film of the PEEK resin composition comprising the PEEK resin and conductive carbon black is too high, crystallization of the PEEK resin is caused to proceed, and the resulting semiconductive film tends to become brittle. If the cooling temperature in forming of the film of the PEEK resin composition is too low, a scatter of thickness of the resulting film becomes wide though a film excellent in mechanical properties is provided. The cooling temperature within a range of 60 to 120°C as recited in claim 1 of the present application is sufficiently high compared with the cooling temperature, 20°C ± 1°C, in forming of a film of the PEEK resin composition shown in Yoshida and sufficiently lower than the cooling temperature, 210°C, shown in Comparative Example 4 of the present specification.

With regard to the feature that "the number of reciprocating folds required up to cutting . . . being at least 10,000 times," Applicant respectfully believes that the Examiner has not shown that this feature is necessarily present in Yoshida to support the conclusion of inherency.

Applicant respectfully submits that these features are neither inherently present nor obvious given the technicalities associated with PEEK resin films and in particular are neither taught nor suggested by the two cited references. Therefore, the combined teachings of the Yoshida and Moss references would not have led a person of ordinary skill in the art to the claimed semiconductive film. The Examiner has not adequately explained why one skilled in the art would have had a reason to make the semiconductive film with the properties recited in claim 1. The Examiner's contentions do not take into account what the collective teachings of the prior art would have suggested to one of ordinary skill in the art.

In the event, the Examiner wishes to maintain the rejection based on the combination of

the cited references, Applicant respectfully requests that the missing reasons be provided to factually support the rejection, and to allow Applicant to properly evaluate the bases for the Examiner's position and respond appropriately. See, MPEP § 2142.

In view of the foregoing, Applicant respectfully submits that the Examiner has not established a *prima facie* case of obviousness of claim 1 under 35 U.S.C. § 103(a). Even if *prima facie* obviousness has been established, which it has not, it is urged that the cited art nonetheless fails to render the present invention obvious under a proper § 103 analysis. Each of the dependent claims require the limitations of claim 1 and, at least for these reasons, the dependent claims also patentably define themselves over the Yoshida and Moss references. Accordingly, reconsideration and withdrawal of this rejection are respectfully requested.

III. Conclusion

Applicant believes this response to be a full and complete response to the Office Action. Accordingly, favorable reconsideration in view of this response and allowance of all of the pending claims are earnestly solicited.

If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

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Respectfully submitted,

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